



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/540,401

06/23/2005

Akihiko Nishio

L9289.05151

9722

52989

7590

06/19/2009

Dickinson Wright PLLC

James E. Ledbetter, Esq.

International Square

1875 Eye Street, N.W., Suite 1200

Washington, DC 20006

EXAMINER

KHAN, MEHMOOD B

ART UNIT

PAPER NUMBER

2617

MAIL DATE

DELIVERY MODE

06/19/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,401	Applicant(s) NISHIO ET AL.	
	Examiner MEHMOOD B. KHAN	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04/08/2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 04/08/2009 have been fully considered but they are not persuasive.

Applicant argues in the remarks Frodigh does not disclose one result is generated.

The Examiner respectfully disagrees. Frodigh clearly discloses averaging of C/I measurements of all of the subcarriers (**Col 10: 62-Col 11: 9**) where Frodigh discloses C/I measurements on the each of the set of M subcarriers and averaging the results. Frodigh further discloses taking interference measurements on all of the subcarriers and averaging the result as well. Please note that even if a multiple number of results are generated and sent, then it is obvious to one of ordinary skill in the art that one result is still generated and sent. Thus the combination of Frodigh and Terry meet the claimed limitations.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh et al. (US 5,726,978 herein Frodigh) in view of Terry (US 2004/0009786).

Claim 19, Frodigh discloses a radio communication apparatus (**Fig. 2: 200, 202**), Frodigh discloses a reception section that receives an orthogonal frequency division multiplex (OFDM) signal (**Col 2: 52-53, where Frodigh discloses OFDM, Col 7: 66, Fig. 3A: 330, where Frodigh discloses a link receiver**); Frodigh discloses a reception quality measuring section that measures reception quality of each subcarrier in the received OFDM signal (**Col 8: 33-38, Figure 3C: 330, 332, 342 and 344, where Frodigh discloses a receiver with a demodulator and signal quality and interference measurement means**); Frodigh discloses a subcarrier selection section that selects a plurality of subcarriers where higher reception quality is measured (**Col 10: 15-36, Fig. 3A: 360, where Frodigh discloses an ACA processor and selection of M subcarriers, Col 7: 29-34, where Frodigh discloses measurement messages on a control channel**); Frodigh discloses a generating section that generates one report representing the reception quality of all of the plurality of subcarriers selected (**Col 10: 62 – Col 11: 9, where Frodigh discloses averaging the C/I measurements, i.e. one result**); Frodigh discloses a reporting section that reports the generated one report and information indicating the plurality of subcarriers selected, to a communicating party (**Col 10: 60 through Col 11: 9, where Frodigh discloses sending the results of the measurements, i.e. the averaged result**).

Frodigh does not explicitly disclose a channel quality indicator (CQI).

In an analogous art, Terry discloses a channel quality indicator (CQI) (**0012, where Terry discloses that it is well known in the art to use CQI**). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Frodigh to include using a CQI as taught by Terry so as to select the proper modulation and coding scheme (**0012**).

Claim 20, Frodigh discloses wherein the subcarrier selection section selects subcarriers of reception quality equal to or higher than a threshold based on reception quality and a threshold decision against a threshold reported from the communicating party **(Fig. 5: step 516, where Frodigh discloses a C/I threshold)**.

Claim 21, Frodigh discloses wherein the threshold is controlled adaptively according to an amount of traffic in a cell of the radio communication apparatus and neighboring cells **(Col 10: 30-36, where Frodigh discloses selection of subcarrier based on use of subcarrier in an adjacent channel, it is easily understood by one of ordinary skill in the art that not selecting a subcarrier in use in an adjacent channel will increase C/I)**.

Claim 22, Frodigh discloses wherein the subcarrier selection section selects the same number of subcarriers as notified from the communicating party **(Col 10: 19-26, where Frodigh discloses reconfiguring)**.

Claim 23, Frodigh discloses wherein the number of subcarriers is controlled adaptively according to an amount of traffic in a cell of the radio communication apparatus and neighboring cells **(Col 12: 40-49, where Frodigh discloses re-assigning of subcarriers)**.

Claim 24, Frodigh discloses wherein said subcarrier selection section selects subcarriers from subcarriers restricted beforehand out of all subcarriers **(Col 7: 44-50, where Frodigh discloses number of carriers in the system)**.

Claim 25, Frodigh discloses a communication terminal apparatus comprising the radio communication apparatus according to claim 19 **(see Figure 3A, el. 330)**.

Claim 26, as analyzed with respect to the limitations as discussed in claim 19.

Claim 27, as analyzed with respect to the limitations as discussed in claim 19.

Frodigh discloses a base station apparatus that sends information which becomes a selection criterion of subcarriers, to a communication terminal apparatus **(Fig 4A: 402, 404, where Frodigh discloses a measurement order on available subcarriers)**; Frodigh discloses a subcarrier selection section that selects a plurality of subcarriers of higher reception quality based on selection criterion information sent from said base station apparatus **(Fig. 5: 502, 504, 506, 518, 520, where Frodigh discloses receiving measurements deciding on least interfered subcarrier and exchange, a least interfered subcarrier selection results in higher C/I)**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEHMOOD B. KHAN whose telephone number is (571)272-9277. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on 571-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the

Art Unit: 2617

Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B. K./
Examiner, Art Unit 2617

/Lester Kincaid/
Supervisory Patent Examiner, Art Unit 2617